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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,022	09/26/2003	Neal E. Ulen	P16919	7687

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EXAMINER	
PAPE, ZACHARY	

ART UNIT	PAPER NUMBER
2835	

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/672,022	ULEN ET AL.	
	Examiner	Art Unit	
	Zachary M. Pape	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because The abstract is not sufficient. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

(1) if a machine or apparatus, its organization and operation;

(2) if an article, its method of making;

Extensive mechanical and design details of apparatus should not be given.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Chen (US 6,639,804). With respect to claim 1 (Figs 1 and 2), Chen teaches a method comprising: providing a circuit board (30) having a plurality of holes formed there through; and mounting a spring (10) to an underside of the circuit board, the mounted spring having a plurality of holes (107) each aligned with a respective one of the holes in the circuit board (As illustrated in Fig 1)

Claims 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US 6,097,601). With respect to claim 15, Lee teaches an assembly comprising: a circuit board (40); and a spring (20) mounted to an underside of the circuit board and having at least one spring finger (24) to apply a load to the underside of the circuit board.

With respect to claim 16, Lee further teaches that the spring (20) has two spring fingers (24) in contact with the underside of the circuit board.

With respect to claim 17, Lee further teaches that the spring has four board attach fingers (23, 25) each extending through a respective hole (41) in the circuit board.

With respect to claim 18, Lee further teaches that the spring (20) has four bosses (22), each having a respective one of the board attach fingers extending upwardly therefrom (As illustrated in Fig 3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-13, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Lee (US 6,097,601). With respect to claim 2, Chen fails to teach the use of at least one spring finger to apply a load to the underside of a circuit board. Lee teaches the use of a plurality of spring fingers (24) which apply a load to the underside of a circuit board. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the spring fingers of Lee with the spring member of Chen to provide a means of holding the circuit board (30) away from the bottom of the spring (10) and chassis (20). Preventing direct contact between the bottom of the spring (10) and the circuit board (30) of Chen facilitates better cooling on

the underside of the circuit board (30) since air would be present between the bottom of the spring and the circuit board and thus carry away any heat present in the area.

With respect to claim 3, Chen further teaches that the spring (10) includes a plurality of bosses (104), each having one of the holes of the spring formed there through (107,as illustrated in Fig 2), and the method further comprising: sandwiching each of the bosses (104) of the spring between a respective chassis standoff (204, 205, 206, 208) and a respective heat sink standoff (Generally comprising 50).

With respect to claim 4, Chen further teaches simultaneously inserting a fastener (52) through one of the holes of the circuit board and through a corresponding hole of the spring (Column 2, Lines 53-55)

With respect to claim 5, Chen further teaches that the plurality of holes of the spring includes four holes (As illustrated in Fig 2).

With respect to claim 6, Chen further teaches that the plurality of holes of the circuit board includes four holes located to define a rectangle (As illustrated in Fig 1).

With respect to claim 7, Chen further teaches mounting of the spring to the underside of the circuit board but fails to teach inserting each of a plurality of board attachment fingers of the spring through a respective one of the holes of the circuit board to do so. Lee teaches the use of attachment fingers (22, 23, 25) used to mount a spring mechanism (21) to the underside of a circuit board. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the attachment fingers of Lee with the mounting spring and circuit board of Chen to provide an alternative and additional means of attaching the spring member to the circuit board.

With respect to claim 8, Chen teaches a spring (10) comprising: a perimeter section including a plurality of sides (12, 16, 14, 18) around an open space (103). Chen fails to teach first and second spring fingers. Lee teaches first and second spring fingers (24) extending inwardly and upwardly in an inclined fashion opposite of one another. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the spring fingers of Lee with the spring member of Chen to provide a means of holding the circuit board (30) away from the bottom of the spring (10) and chassis (20). Preventing direct contact between the bottom of the spring (10) and the circuit board (30) of Chen facilitates better cooling on the underside of the circuit board (30) since air would be present between the bottom of the spring and the circuit board and thus carry away any heat present in the area.

With respect to claim 9, Lee teaches four attachment fingers (22, 23, 25) each extending substantially vertically upwardly from the perimeter section of the spring (20) on four opposite ends of the perimeter.

With respect to claim 10, Chen teaches four bosses (104) formed in the perimeter section. It would have been obvious to place the attachment fingers of Lee on the four bosses (104) of Chen to provide an alternative and superior means of attaching the spring of Chen to the circuit board of Chen.

With respect to claim 11, Lee further teaches that the perimeter section is substantially octagonal, and includes a pair of long sides (Partially defined lengthwise by 24) that are positioned opposite to each other and that are longer than the sides from which the first and second spring fingers (24) extend, the perimeter section further

including four short sides (Adjacent to the spring members (22, 23, 25)) that are shorter than the sides from which the first and second spring fingers extend, each of the short sides joining an end of one of the long sides to an end of one of the sides from which the first and second spring fingers extend.

With respect to claim 12, Chen fails to teach that the spring (10) is made of stainless steel. It would have been obvious to one of ordinary skill in the art at the time the invention was made to construct the spring of stainless steel, since it has been held to be within the general skill of a worker in the art to select a known material (Such as stainless steel for use as a spring) on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Stainless steel is a durable material which would prevent rusting of the spring, which in turn reduces the likelihood of damage to the circuit board and other components, and further reduces the need to replace the damaged parts (Spring, circuit board, etc.).

With respect to claim 13, Chen teaches that the spring (10) is formed as a single unitary piece of material.

With respect to claim 19, Chen teaches the use of a system comprising: a chassis (20); a plurality of chassis standoffs mounted on the chassis (204, 205, 206, and 208); a heat sink (40) having a plurality of heat sink standoffs mounted on a lower side thereof (Comprised of the retention module 50), a spring (10) including a plurality of bosses (104) each sandwiched between a respective one of the chassis standoffs (Comprising 50) and a respective one of the heat sink standoffs (204, 205, 206, and 208); and a circuit board (30) mounted in the chassis with the spring (10) below the

circuit board and the heat sink (40) above the circuit board, the heat sink positioned to conduct heat from an integrated circuit (IC) package (32) mounted on an upper side of the circuit board. Chen fails to teach that the spring includes at least one spring finger to apply a load to an underside of the circuit board at a locus of the IC package. Lee teaches the use of a spring (20) comprising a plurality of spring fingers (24) to apply a load to the underside of a circuit board. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the spring fingers of Lee with the spring member of Chen to provide a means of holding the circuit board (30) away from the bottom of the spring (10) and chassis (20). Preventing direct contact between the bottom of the spring (10) and the circuit board (30) of Chen facilitates better cooling on the underside of the circuit board (30) since air would be present between the bottom of the spring and the circuit board and thus carry away any heat present in the area.

With respect to claim 20, Lee further teaches that the spring includes two spring fingers (24) in contact with the underside of the circuit board.

With respect to claim 21, Chen further teaches the use of four fasteners (52) each extending downwardly through a respective one of the heat sink standoffs (Comprised of 50), through a respective hole in the circuit board, and through a respective hole in the spring (107), but fails to specifically teach that the fastener extends through to the chassis (20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to further extend the fastener of Chen into the chassis to provided added support to the heat dissipating system. Anchoring the

system into the chassis via the fasteners would further prevent any damage to the chip, and heat sink in the event that the standoffs (204, 205, 206, and 208) fail.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Lee and further in view of Mann (US 6,404,634). Chen in view of Lee teaches the claim limitations of claim 8 above, but fails to teach the use of a pair of tape segments mounted on the first and second spring fingers. Mann teaches the use of thermal tape (13) for mounting in a heat-dissipating device (Column 4, Lines 40+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the tape of Mann with the spring and heat dissipating devices of Lee and Chen to provide a means for facilitating heat transfer from the circuit board to the spring fingers (24) and finally to the surrounding air (Mann, Column 4, 36-41). Providing a facilitating means such as tape will allow the component, and circuit board to cool more efficiently as the tape allows the spring finger to have more surface area in contact with the circuit board.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.2004/0047130; ~~6,239,974; 6,097,001; 6,639,804~~; 6,404,634; 2005/0111190. The above stated references further teach general structures which connect a circuit board to a heat sink.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-2201. The examiner can normally be reached on Mon. - Thur. & every other Fri. (8:00am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached at 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ZMP

ANATOLY VORTMAN
PRIMARY EXAMINER